Item No. SS 2(b)
October 15, 2012

CITY COUNCIL STUDY SESSION ITEM

SUBJECT:
East Link: Narrowing of cost saving options.

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POLICY CONSIDERATION:
Memorandum of Understanding:
The City and Sound Transit entered into a Memorandum of Understanding (MOU) in November 2011 that defines City contributions to a downtown light rail tunnel. The MOU also provides the basis for a Collaborative Design Process (CDP) that was further defined and agreed to in January 2012.

Collaborative Design Process:
The CDP provides the mechanism for the City and Sound Transit to jointly advance the design of the East Link Project through the 60% design phase and identify cost savings to offset part of the City's tunnel funding contribution.

Cost Savings Work Plan:
Earlier this year, the Council identified cost savings options for design refinement and impact analysis in a joint agency work plan. **The findings of this work plan are now available for review and consideration of which cost saving options should be advanced for further design and environmental analysis.** Narrowing the options creates the opportunity to provide more certainty to the community and facilitates efficient use of final design and staff resources.

DIRECTION NEEDED FROM COUNCIL:
_X_ Action
_X_ Discussion
____ Information

Staff will seek Council direction on the narrowing of the cost savings options to advance for additional design and environmental analysis. On October 25, the Board will also be asked for direction on narrowing of the cost savings options.

City staff will provide a report on the outreach effort and input from the community and a recommendation by the joint CDP Steering Committee on which cost savings ideas to advance for further design and environmental analysis.

BACKGROUND/ANALYSIS:

Cost Saving Work Plan

The City and Sound Transit have been working since the beginning of the year to identify and evaluate potential cost savings measures that hold promise to reduce the cost of the East Link Project. This effort is consistent with the MOU, the subsequent CDP, and Council direction. A particular focus of the cost savings effort has been to reduce overall East Link Project costs in Bellevue in order to reduce or eliminate the City's contingent $60 million tunnel funding contribution, as detailed in the MOU.

In Spring 2012, the City and Sound Transit identified a range of potential cost savings options for consideration by the community, City Council, and Sound Transit Board. After extensive public engagement, the City Council and Sound Transit Board identified a subset of cost saving ideas for further advancement and clarified the design objectives to be pursued for each area. This direction is contained in the Sound Transit and City of Bellevue Cost Savings Work Plan (Attachment A).

Since June, Sound Transit and City staff have advanced design on the selected cost savings ideas, conducted a preliminary screen of environmental impacts, and developed Rough Order of Magnitude (ROM) cost estimates for each of the cost savings ideas. This analysis is contained in the *Cost Savings Work Plan Findings Advancement of Options September 2012 Report* (provided under separate cover). This report is available to the public online at: http://projects.soundtransit.org/Projects-Home/East-Link-Project.xml. Sound Transit and City staff presented the September 2012 Cost Savings Work Plan Findings to the City Council on October 1.

Narrowing of Cost Saving Options

In October, the City Council and Sound Transit Board are asked to endorse moving forward those options that the agencies believe may meet the shared project goals and could be incorporated into the East Link Project. The timeline for narrowing the cost savings options is as follows:

- On October 1, Sound Transit and City staff presented the findings of the Cost Savings Work Plan to the City Council.
- On October 15, City staff will provide a report on the outreach effort and the CDP Steering Committee's recommendation on the narrowing of the options. **Council direction is requested on the narrowing of cost saving ideas to advance for further analysis; it is not a final decision and does not alter the East Link Project as approved by the Sound Transit Board or as agreed to in the MOU.**
- *Tentative, if needed*: On October 22, continued discussion on the narrowing of cost savings options.
- On October 25, the Sound Transit Board will also be asked to provide direction on the narrowing of the options.

The direction on the narrowing of the cost savings options will allow the City and Sound Transit to continue to invest staff and design resources in advancing those options that have the most potential to meet shared project goals. The next phase of review includes additional engineering and environmental analysis consistent with requirements under NEPA and SEPA. Next spring, the City Council and Sound Transit Board will be asked to make a final decision on whether to adopt any of the cost saving ideas into the East Link Project. This will present significant policy choices, comparing the cost savings options with the Preliminary Engineering design. Narrowing the cost savings options now will allow for additional engineering and environmental analysis to be developed over the next six months, providing the necessary information to make that comparison.

Public Engagement

In September and October, the City and Sound Transit conducted public outreach to share the findings of the Cost Savings Work Plan and seek feedback on the ideas. Outreach efforts included small group meetings with affected property owners, stakeholders, and community leadership and three public drop-in sessions, each focusing on a different cost savings area (Bellevue Way, 112th Avenue SE, and Downtown). A draft summary of the outreach effort and public input will be provided in the Council desk packet. Briefly, the public comments on the cost savings ideas during this outreach effort were generally consistent with the feedback received back in June.

There is still strong support along Bellevue Way to keep the light rail in a lidded trench along the east side of Bellevue Way (per the adopted project) rather than move Bellevue Way west. The HOV lane has generated the most discussion and opposition from the Enatai neighborhood. Most comments questioned the need and effectiveness of the HOV lane, the ability to fully mitigate the additional impacts of cutting into the hillside, and moving traffic noise closer to the neighborhood.

Along 112th Avenue SE the strongest support has been for keeping the light rail in a trench under SE 4th Street in order to maintain neighborhood access and mitigate noise and visual impacts. There was no support for connecting the realigned SE 15th Street through Bellefield Residential Park into Surrey Downs neighborhood. The "Texas T" ramps crossing over light rail at SE 4th raised many concerns about northbound access and visual impacts. Closing SE 4th to all but emergency vehicles was viewed as redirecting too much neighborhood traffic through the residential areas to the remaining access streets.

Of the three downtown station options the "optimized PE" (3e) and "NE 6th," (3c) garnered the most interest, with NE 6th (3c) being recognized by the public as having the best opportunity for cost savings potential. It would be difficult to characterize any of the options as a clear "favorite," as each one had its supporters and detractors, though the "stacked tunnel" (3b) seemed to generate the least amount of interest, either pro or con. In general, there was support for better pedestrian access with the west and south entrances (3e, 3b). There were concerns about losing travel lanes on 110th (3b) and having only one downtown station entrance (3c). While there was support for the NE 6th (3c) station option, there were concerns about access to the transit center and the position and visibility of the station. In general, comments centered on the importance of high quality design and access for any downtown station.

CDP Steering Committee Recommendation

The CDP Steering Committee has developed a consensus, joint recommendation for City Council and Sound Transit Board consideration. This was a staff exercise to consider the

technical findings of the work plan, the shared project goals, and input from the community. It is provided for Council and Board consideration as each body evaluates the request to narrow options for continued analysis.

The following cost savings ideas are recommended for further design and environmental analysis:

Location	Recommended Option	Potential Cost Savings*	City Cost
Overall Project	Engineering "Just Take Its"	$15 – 20M	
Bellevue Way	At grade LRT w/HOV Lane: 1a	7 – 11M	$11M**
112th Avenue SE	"Road-over-rail" at SE 15th, SE 4th Emergency Access Only: 2.b.1	9 - 16M	
Downtown Station	NE 6th Station: 3c	23 - 39M	
Total		**$54 – 86M**	**$11M**

*Estimates based on preliminary level of design. Upward cost pressure in other areas of the Project may consume some of the potential cost savings.
**TFP cost estimate is $20M for HOV lane as independent project.

1. **Bellevue Way Alignment at the Winters House – Option 1a: Continue to advance the cost saving idea included in the work plan, shifting Bellevue Way west to allow space for at-grade light rail in front of the Winters House and a proposed City of Bellevue HOV lane from the main entrance of the South Bellevue Station north to the Bellevue Way/112th Ave SE "Y" intersection.** (See Attachment B for more detail on this option.)

Because the City Council has included the Bellevue Way HOV lane in the City's Transportation Facilities Plan environmental review and continues to make progress toward implementation, this single cost saving option from the work plan is recommended for continued design and environmental analysis. As design and environmental analysis advances, key areas of focus are:

- potential cost savings for both light rail and HOV lane projects;
- construction coordination and risk; and,
- environmental impacts and mitigation, including parkland, historic structures, noise, and urban design treatments.

City Council has directed staff to include the Bellevue Way HOV project in the package of improvements for a programmatic-level environmental analysis in the Transportation Facilities Plan (TFP) environmental impact statement (EIS). If the Council wishes to pursue the project, likely next steps include adopting the TFP list in the spring of 2013 after publication of the final TFP EIS and amending the CIP to add the Bellevue Way HOV lane as a stand-alone project and providing budget for further design and environmental analysis. These actions could happen in tandem with an anticipated spring 2013 decision on which cost savings ideas to formally adopt into the East Link Project and a subsequent update to the MOU.

2. **112th Avenue SE Alignment: Raise 112th Avenue SE roadway over an at-grade light rail alignment at SE 15th Street. Close SE 4th Street except for emergency access (at-grade light rail). Do not advance the design option to connect Bellefield Residential Park to Surrey Downs via a new public roadway.** (See Attachment C for more detail on this option.)

At SE 15th Street, the cost saving idea to raise 112th Avenue SE over an at-grade light rail alignment was advanced last spring in response to public input and potential for cost savings. While this portion of the alignment appears to be cost neutral as compared to the elevated light rail option in the MOU, it is recommended for continued analysis because the design continues to be the neighborhood preference. Continued design will allow for refinement to avoid and minimize impacts and optimize roadway and light rail functionality.

At SE 4th Street, the cost saving idea to close all access at SE 4th Street, except for emergency vehicles, is recommended for continued advancement. This is recommended primarily because it has the most potential to balance neighborhood impacts, urban design features, and light rail functionality. Secondarily, this option is also advanced because it provides the most significant opportunity for cost savings. As design and environmental analysis advances, key areas of focus are:

- improvements to facilitate neighborhood access to and from I-405;
- traffic calming measures to address the redistribution of volumes in Surrey Downs; and,
- the 112th Avenue SE light rail alignment and street design, including neighborhood protection elements, streetscape and urban design features, local access to the station, and noise and visual mitigation.

With this recommendation, no further work on the MOU design of an elevated light rail crossing of SE 15th into a trench along 112th Avenue SE will be performed.

3. **Downtown Station Design: Relocate Station to NE 6th Street.** (See Attachments D and E for more detail on this option.)

The cost saving idea to relocate the tunnel station to NE 6th Street is recommended for advancement because it has significantly more potential for cost savings than the other two downtown station options. Continued analysis will allow for further evaluation of options to make the NE 6th station design compatible with its role as the highest ridership, centerpiece station for East Link. Key areas of focus will include:

- opportunities to enhance visibility and architectural features to mitigate the entrance moving farther east from the core of downtown;
- additional improvements for pedestrian access to the station to address the elimination of a second station entrance;
- operational issues for the City Hall campus, particularly the functionality of the police and visitor garages; and,
- light rail design improvements to minimize impacts to light rail travel time.

Direction Requested:
As discussed above, the City Council and Sound Transit Board are asked to narrow the cost saving options advanced for additional design and environmental analysis. This will allow for continued investment of staff and design resources into those options with the most potential to meet shared project goals. **This is not a final decision; a final decision between cost saving options and the PE alignment is anticipated in spring 2013.**

Response to Council Questions Posed
On October 1, City and Sound Transit staff presented the findings of the Cost Savings Work Plan to the City Council. City Councilmembers posed numerous questions, some of which were addressed during the presentation, and others that have responses below. Sound Transit staff will

attend the October 15 presentation and will be available, along with City staff, to answer additional Council questions.

1. How are contingencies reflected in the cost estimate?

The MOU Project and the Cost Savings Ideas include the estimated construction amount for each option. Contingencies are excluded from the comparisons as Sound Transit sets contingency levels based on potential risk. Too little is known about the cost savings ideas to establish contingency levels at this time. The effect is that the same contingency budget is being carried for both the MOU Project and the Cost Savings Ideas.

2. What is the Bellevue Way at-grade light rail savings without an HOV lane?

The Cost Savings Work Plan (Attachment A) directed staff to incorporate the HOV lane with the "shift Bellevue Way west" option as long as the City continues to advance the HOV lane project. If the City elects not to proceed with the HOV lane, the Work Plan directs staff to evaluate relocating the Winters House. As a result, no further work has been done since the June 5 Cost Savings report on the option of shifting Bellevue Way west without an HOV lane. The June 5 report showed an estimated savings of $6-10M.

3. Does the Bellefield Residential Park – Surrey Downs access road requires acquisition of one of the homes that would have otherwise been a partial take in this area?

Yes, this option requires the full acquisition of one home that would have been a partial take with the MOU design.

4. What is the breakdown of cost for right-of-way and damages for the City Hall and Metro sites?

Each of the three options requires additional property acquisition for both the City Hall and Metro sites, as compared to the MOU alignment. The additional value of the land and parking compensation for each option follows:

Option 3e Optimized PE:	$ 800,000
Option 3b Stacked Tunnel:	$ 1,000,000
Option 3c NE 6th Station:	$14,100,000

5. Does the noise analysis on 112th Avenue SE assume that the homes south of Surrey Downs Park, which the Council may elect to acquire, are present?

Yes, the noise analysis includes these homes. Light rail noise impacts would be mitigated with sounds walls, building sound insulation, and/or special track work.

OPTIONS:

1) Move to direct the City Manager to communicate to the Sound Transit Board the City's support for continued analysis of the following options:
    a. Bellevue Way Alignment at Winters House Option 1a – At-grade light rail with Bellevue Way HOV lane
    b. 112th Ave SE Alignment:
        i. Raise 112th over at-grade light rail at SE 15th
        ii. Option 2.b.1 – SE 4th Emergency Access Only

c. Downtown Station Option 3c – NE 6th Station

2) Defer providing direction tonight and schedule additional discussion and action for October 22.
3) Provide alternative direction to staff.

ATTACHMENTS:

A. Sound Transit and City of Bellevue Cost Savings Work Plan
B. *September 2012 Cost Savings Work Plan Findings* Table 3-2 Bellevue Way Alignment
C. *September 2012 Cost Savings Work Plan Findings* Table 3-3 112th Ave SE Alignment
D. *September 2012 Cost Savings Work Plan Findings* Table 3-6 Relocate Station to NE 6th
E. *September 2012 Cost Savings Work Plan Findings* Table 3-7 Downtown Station Design
F. September 2012 Cost Savings Work Plan Findings (provided under separate cover on October 1); available online at: http://projects.soundtransit.org/Projects-Home/East-Link-Project.xml

SOUNDTRANSIT

Exhibit A

Sound Transit and City of Bellevue Cost Savings Work Plan

This joint work plan identifies Cost Savings ideas for further development. It is not a final decision, and in no way alters the East Link Project as approved by the Sound Transit Board and reflected in the Record of Decision issued by the Federal Transit Administration and the Federal Highway Administration, but rather is an indication that the ideas have sufficient merit to continue to invest resources to review. The next phase of review, including additional engineering design and impact and mitigation analysis consistent with requirements under NEPA and SEPA, will occur in the latter half of 2012 and into 2013.

A final decision to incorporate any one or more of these Cost Savings Ideas into East Link would not occur until this additional review is complete; and only after the Sound Transit Board and the City Council determine, in light of the cost savings available and the impacts on the Project and surrounding neighborhoods (including ridership, system impacts, noise, traffic and visual impacts) that these Cost Savings Ideas are consistent with the shared Project goals.

Winters House

Advance for further development options that replace the retained cut by the Winters House with an at-grade light rail alignment.

Design options: If the City Council in July 2012 decides to include a Bellevue Way HOV lane in the City's Transportation Facilities Plan environmental review and continues to make progress towards implementation, then study shifting Bellevue Way west with the cost of the project addressed as set forth in Section 7.2 of the MOU (Idea 1a). If not, then study relocating the Winters House. (Idea 1b)

Other design considerations:

- Noise and visual mitigation for increased length of above grade guideway
- Reduce the added length of elevated guideway
- Optimize the access location for the blueberry farm and Winter's House
- If alternative 1a advances, it should include an HOV lane

Advantages to this approach:

- Lower cost and risk
- Better LRT profile for operations
- Potentially overall reduction in cost and construction impacts for the City and Sound Transit if Bellevue Way HOV lane and LRT construction properly sequenced

112th

Advance for further development an at-grade alignment the length of 112th with a crossing from the east to the west-side at SE 15th below a new road overpass (Idea 2b). No further development of the MOU option of an elevated fly-over at SE 15th and to the extent possible the retained cut at SE 4th.

Design options: Continue to study location for optimal access to the Surrey Downs neighborhood including options from 112th which do not require a gated crossing with bells.

Other Design considerations:

- Work with the community on a package of changes in park use, neighborhood traffic control, other measures to mitigate change in access

- Reduce the height of the reconstructed 112th Ave SE over light rail by depressing light rail tracks to the extent prudent given soil conditions
- Use landscaping to screen the road overpass and LRT
- Noise mitigation for at-grade LRT
- Evaluate pedestrian access to the E. Main Station from the neighborhood and kiss-and-ride access from 112th

Advantages to this approach:

- Responds to Leadership Group criteria for 112th with respect to cost, visual, noise, and avoidance of retained cut
- Lower cost and risk
- Provides grade separated LRT operations

Downtown Station

Advance for further development both a Tunnel Station and the NE 6th Station to refine and better distinguish the difference in potential cost savings.

Design issues to examine with Tunnel Station:

- Optimize configuration to minimize impacts to surface traffic while retaining entrances north and south of NE 4th
- May involve stacked tunnel with one entrance setback from street and mitigation for loss of turn pocket south of NE 4th or further optimization of PE design with mezzanine

Design issues to examine with NE 6th Station:

- Reach agreement on impacts to City Hall and damages payment prior to further design
- Determine acceptability of design deviation (curve at 110th/NE 6th)

Advantages to this approach:

- Allows limited additional time to vet actual cost differences. Relocating the Station to NE 6th should only be advanced further if it has substantially more savings as it has operational and ridership impacts.

3.1 Bellevue Way Alignment at Winters House

3.1.1 Cost Savings Idea 1a - Shift Bellevue Way West to Allow Space for At-Grade LRT in Front of Winters House and a Proposed City of Bellevue HOV Lane

Table 3-2
Cost Savings Evaluation: Shift Bellevue Way West – Cost Savings Idea - 1a

Cost Savings Evaluation Worksheet	
Description: Shift Bellevue Way West to Allow Space for At-Grade LRT in Front of Winters House with Proposed City of Bellevue HOV Lane	**Proposal: 1a**
MOU Project: The Adopted Project for the Bellevue Way alignment includes an aerial structure coming out of the I-90 corridor on the east side of Bellevue Way, continuing on aerial structure through the South Bellevue Way Park-and-Ride with an aerial station platform. The alignment continues north also on aerial structure and then transitions to a trench in front of Winters House, gradually climbing out of the trench as the alignment heads north to the "Y" intersection of 112th Ave. SE and Bellevue Way.	
Cost Savings Idea: Shift Bellevue Way West to Allow Space for At-Grade LRT in Front of Winters House with Proposed City of Bellevue HOV Lane - This Cost Savings Idea moves Bellevue Way to the west so the LRT can be constructed at-grade at the existing east curb line along the Winters House and continues the City of Bellevue proposed HOV lane north from the main entrance of the South Bellevue Station to the Bellevue Way and 112th Ave "Y" intersection. This modified layout eliminates two major elements from the adopted project – the lidded trench at the Winters House and the open trench south and north of this area. Cost savings come from eliminating the trench and replacing it with at-grade track in this section, although there are additional costs associated with moving the roadway west, additional property impacts and additional infrastructure associated with the HOV lane. Access to the Winters House and Blueberry Farm is maintained and vehicle and pedestrian access is provided via low speed driveway/multi-use path. In addition, this idea includes: • A City of Bellevue southbound HOV lane that would increase southbound traffic capacity. It requires more property acquisition and increases the height of the retaining wall structures to the west. **Why Consider this Configuration**: • As compared with the Cost Savings Idea shown in the June *Cost Savings Report*, the access to the Winters House and Blueberry Farm has been moved south and the LRT alignment lowered to minimize the visual impact of the aerial structure. • Provides additional separation between LRT and the Winters House. LRT is planned in the present location of the northbound traffic lanes of Bellevue Way and off the Winters House property. • Better profile for LRT operations (fewer vertical changes). • City's proposed HOV Lane is included with LRT, which enables both projects to be built at a lower cost than if both projects were built separately. • A multi-use path is proposed east of Bellevue Way from the South Bellevue Station to 112th Ave. SE. in lieu of a sidewalk. **Design Considerations Addressed (From Sound Transit and City of Bellevue Cost Savings Work Plan - Motion M2012 -41 dated June 28, 2012):** • Noise and visual mitigation for increased length of above grade guideway – Preliminary noise and visual impacts are discussed in this report and will be addressed in the upcoming environmental review if this cost savings idea is endorsed for further feasibility analysis. Preliminary noise mitigation is described below. In addition, landscaping types that may contribute to screening have been identified for areas where sufficient space exists. LRT alignment lowered to minimize the visual impact of the aerial structure.	

Shift Bellevue Way West to Allow Space for At-Grade LRT in Front of Winters House with Proposed City of Bellevue HOV Lane	Proposal: 1a

- Reduce the added length of elevated guideway from the previous cost savings idea - As compared with the Move Bellevue Way West option included in the June Cost Savings Report, the portion of the guideway that will appear elevated has been reduced by approximately 600 feet in length.

- Optimize the access location for the Blueberry Farm and Winters House - The access location for the Blueberry Farm and Winters House has been located south of the Blueberry Farm. This has allowed the elevated guideway to come down to at-grade sooner than the alignment shown in the June Cost Savings Report.

- If alternative 1a advances, it should include a HOV lane– The Move Bellevue Way West Option 1a now includes the City's Bellevue Way HOV lane project.

	Range of Savings (2010 $ M)
Cost Analysis	$ 7 to $ 11 This Cost Savings Range is based upon a City of Bellevue contribution of $ 11 million for the City of Bellevue HOV Lane. The City's estimate for building the HOV lane separately is approximately $ 18 million.

Resource	**MOU Project LRT in Trench in front Of Winters House**	**Proposal 1a: Light Rail at-grade, shift Bellevue Way West with HOV Lane**
LRT Operations	Vertical alignment geometry near maximum allowable design criteria.	Improves LRT operations due to fewer vertical changes in the alignment thereby increasing rider comfort.
LRT Access and Ridership	N/A	N/A
Traffic Impacts	HOV Lane from main entrance of South Bellevue Station/park-and-ride to I-90.	City of Bellevue proposed HOV lane added, north from the main entrance of the South Bellevue park-and-ride to the Bellevue Way and 112th Ave "Y" intersection. The southbound HOV lane reduces traffic congestion along Bellevue Way SE. Intersection LOS meets City of Bellevue and WSDOT standards.
Vehicle Access	Blueberry Farm access is rerouted and combined with access to the Winters House.	Creates a new combined roadway connection between the Blueberry Farm and Winters House - south of the existing Blueberry Farm entrance. Blueberry Farm parking is modified to allow for the new combined in and out access, with the number of parking spots maintained.
Pedestrian Access	Blueberry Farm public functions combined at the Winters House with one access off Bellevue Way.	Blueberry Farm public functions remain at the existing location. Sidewalk is replaced with a multi-use path to access Blueberry Farm and Winters House.

Resource	MOU Project LRT in Trench in front Of Winters House	Proposal 1a: Light Rail at-grade, shift Bellevue Way West with HOV Lane
Approximate Noise Impacts Light Rail and Traffic	Light rail noise impacts to 13 residences on west side of Bellevue Way SE south of Winters House, mitigated with sound walls and/or building sound insulation. The adopted project would not affect the alignment of Bellevue Way SE and therefore would not have any traffic noise impacts.	Light rail noise impacts to 15 residences on the west side of Bellevue Way SE. The increase is from bringing the light rail to at-grade and moving it closer to residences. No LRT noise impacts to the Winters House. Shifting Bellevue Way SE west with LRT and with the addition of a southbound HOV lane results in 20 traffic noise impacts. All of the residences impacted by traffic noise already experience noise levels from Bellevue Way in excess of the traffic noise criteria. Of these, 13 residences are affected by both traffic and light rail noise. The light rail and traffic noise impacts could be mitigated with, a noise wall on top of the retaining wall and building sound insulation. Sound insulation could also be considered instead of the wall.
Approximate Vibration Impacts	There would be potential groundborne noise impact at the Winters House due to the proximity of the proposed lidded trench to the building. There would be no vibration impact at the Winters House. Impact can be mitigated with ballast mats, resilient rail fasteners or floating slab track.	There would be no groundborne noise or vibration impact at the Winters House with the at-grade track alignment and the increased distance of the proposed alignment to the building.
Visual Appearance	Lidded trench in front of Winters House. No changes west of Bellevue Way SE.	Light rail more visible from at-grade profile in front of Winters House. Visual change due to loss of vegetation and a retaining wall on west side of Bellevue Way SE.

Resource	MOU Project LRT in Trench in front Of Winters House	Proposal 1a: Light Rail at-grade, shift Bellevue Way West with HOV Lane
Approximate Property Impacts	Full Acquisitions:1 Partial Acquisitions:4 Residential Displacements: 1 All acquisitions and the one displacement would occur on the east side of Bellevue Way SE (caretaker's house).	Full Acquisitions: 4 Partial Acquisitions: 26 Residential Displacements: 4 For the west side of Bellevue Way SE, the realignment would require three full acquisitions and 24 partial acquisitions, resulting in three residential displacements in addition to the caretaker's house or on the east side of Bellevue Way SE.
Approximate Wetland Impacts	Wetlands in the Mercer Slough Park impacted.	Less wetlands impacted.
Approximate Parkland Impacts	Light rail located within west edge of Mercer Slough Nature Park. Access to the Blueberry Farm retail facility is relocated near the Winters House with a combined driveway.	Similar impacts south of Winters House, slightly less impacts north of house. New combined parking access to the Blueberry Farm and Winters House - south of the existing Blueberry Farm entrance. This configuration keeps the retail area in its current location.
Historic Properties	Lidded trench under front yard of Winters House, potential for construction damage.	Light rail located at-grade in front of Winters House but avoids the property.

3.2 112th Ave. SE Alignment

3.2.1 Cost Savings Idea 2b –Raise 112th Ave. SE Alignment over At-Grade Light Rail

Table 3-3
Cost Savings Evaluation: 112th Alignment – Cost Savings Idea – 2b

Cost Savings Evaluation Worksheet	
Description: 112th Ave. SE Alignment	**Proposal: 2b**
MOU Project: With the MOU Concept, the LRT guideway configuration crosses 112th Ave. SE on an elevated guideway at approximately SE 15th St. The LRT transitions to a trench north of SE 8th Street. North of SE 8th St., the alignment continues in a trench, sufficiently deep to cross below a reconstructed SE 4th St., after which the alignment transitions close to at-grade into the East Main Station. The MOU concept closes all access between Surrey Downs Park and 112th Ave. SE and between SE 1st St. and 112th Ave. SE. This concept maintains Surrey Downs neighborhood access at SE 4th St.	
Cost Savings Idea: Raise 112th Ave. SE Over At-Grade Light Rail: This idea follows a similar horizontal alignment along 112th Ave. SE but raises the 112th Ave. SE roadway in the vicinity of SE 15th St. so vehicle and pedestrian traffic passes over the at-grade LRT. This concept does not change the East Main Station and adds kiss-and-rides on both the east and west sides of 112th Ave. SE. Three alternative options were developed between Surrey Downs Park and the East Main Station along 112th Ave. SE. All alternatives address different configurations to connect the Surrey Downs neighborhood with 112th Ave SE. Common to all Options: • The LRT travels on the east side of 112th Ave SE from the intersection of 112th and Bellevue Way until SE 15th St. • The LRT crosses to the west side at-grade (the existing roadway level) below the raised 112th Ave. SE roadway in a lidded structure through a new roadway embankment. The crossing is in the vicinity of the intersection between 112th Ave. SE and SE 15th St. The connection with SE 15th St .and Bellefield Residential and Office Park is moved north from its current ~~l~~location and changed to right-in, right-out. • These ideas close all direct access between Surrey Downs Park and 112th Ave SE and between SE 1st St. and 112th Ave SE. All options provide access to Surrey Downs Park via SE 4th St. Specific to each of the Options: • Option 2.b.1 –SE 4th Closed (Except for Emergency Access) with Bellefield Residential Park to Surrey Downs Connection (design option): Once on the west side of 112th Ave. SE , the LRT travels primarily at-grade to SE 4th St. There is an at-grade controlled LRT crossing at SE 4th St. to be used only for emergency vehicles. After SE 4th St., the LRT travels at-grade along 112th Ave. SE to the East Main Station (similar to 2.b.2). Unique to this idea, it includes an optional connection between Surrey Downs neighborhood from 111th Pl. SE and the Bellefield Residential Park providing access to Southbound 112th Ave. SE. • Option 2.b.2 General Access at SE 4th St. - Once on the west side of 112th Ave. SE, the LRT travels primarily at-grade until SE 4th St. SE 4th St. crosses elevated over the at-grade LRT to provide general traffic access to/from 112th Ave. SE. Ramps on retained embankments connect to and from southbound 112th Ave SE to SE 4th St. with right-in, right-out access. North of SE 4th St., the LRT travels primarily at-grade along 112th Ave SE to the East Main Station (same as 2.b.1). An optional "U" turn could be provided at the proximity of Main Street to provide northbound vehicles access to the neighborhood. Vehicle access at SE 4th St. is provided by right-in/right-out movement providing pedestrian access as well.	

Description: 112th Ave. SE Alignment	Proposal: 2b

- Option 2.b.3 LRT in Trench Section at SE 4th St. - Once on the west side of 112th Ave. SE, the LRT transitions down into a trench (same as the MOU Project) along the west side of 112th Ave. SE. The trench section is lidded at SE 4th St. SE 4th St. crosses over the LRT on the trench section lid to maintain the present connection to 112th Ave SE and then the LRT transitions up in an open trench section until it meets grade at the East Main Station (common with the MOU project). Maintains vehicle and pedestrian traffic.

Why Consider these Configurations:

- All options provide grade separation between LRT and 112th Ave, SE.
- Options 2.b.1 and 2.b.2 eliminate the trench section and thereby lower project cost and risk.
- Options 2.b.2 and 2.b.3 provide access to Surrey Downs neighborhood via the SE 4th St. connection.
- Option 2.b.2 provides an optional "U" turn is provided in the vicinity of Main Street to provide northbound vehicles access to the neighborhood. Vehicle access at SE 4th St. by right-in/right-out movement providing pedestrian access as well.

Design Considerations Addressed (From Sound Transit and City of Bellevue Cost Savings Work Plan - Motion M2012 -41 dated June 28, 2012):

- Work with the community on a package of changes in park use, neighborhood traffic control, other measures to mitigate change in access - The Collaborative Design Process team developed three options for access to the Surrey Downs neighborhood and one design sub-option (optional connection to Bellefield Residential Park–see description above). Also, initial conversations were held with representatives of the neighborhood regarding likely changes in park use as a result of the light rail alignment options. Once a final alignment is established, the City will work with the community to revise the current park master plan to reflect the changed conditions.

  Traffic counts from 2000 and 2012 were reviewed for major access points to the Surrey Downs Neighborhood. At SE 4th and SE 1st, overall volumes decreased from 2000 to 2012. Combined, there are approximately 800 vehicles per day that use these two streets. These volumes would be redistributed throughout the neighborhood if access to 112th Ave. SE is closed. The neighborhood streets have the capacity to accommodate these volumes. The City would work with the neighborhood through the City's neighborhood traffic safety services program to develop a package of traffic calming measures to help mitigate the impacts from the redistribution of volumes.

- Reduce the height of the reconstructed 112th Ave SE over light rail by depressing light rail tracks to the extent prudent given soil conditions. - At the location of the reconstructed 112th over light rail, the top of rail has been located at the ground level as the available hydro-geotechnical data indicates groundwater close to the surface. The light rail is to stay at the proposed elevation until further geotechnical exploration is performed to determine the risks associated with depressing the LRT at this location. Therefore, the height of 112th Ave SE over the existing roadway is about the same - 23 ½ feet - as shown in the June 2012 open house. A decision to lower reconstructed 112th Ave. will have to be weighed against the increased cost (which will reduce the savings).

- Use landscaping to screen the road overpass and LRT - Landscaping types that may contribute to screening have been identified for areas where sufficient space exists.

- Noise mitigation for at-grade LRT – Preliminary noise impacts are discussed in this report and will be further analyzed in the upcoming environmental review if this cost savings idea is endorsed for further feasibility analysis. Preliminary noise mitigation is described below.

Description: 112th Ave. SE Alignment	Proposal: 2b

- Evaluate pedestrian access to the E. Main St. Station from the neighborhood and kiss-and-ride access from 112th - As part of the work plan, the Collaborative Design Process team evaluated pedestrian access to the East Main station from the neighborhood and proposes a pedestrian walkway from SE 1st to the East Main station and a mid-block crosswalk from the east side of 112th (at approximately the location of SE 3rd). In addition, the team proposes two kiss-and-ride drop-off and pick-up locations, one on each side of 112th to accommodate those heading both north and south.

Cost Analysis	Range of Savings (2010 $ M)
Option 2.b.1 – Emergency Access at SE 4th St. (with Bellefield Residential Park to Surrey Downs design option) ***See Note below for cost impact***	$ 9 to $ 16
Option 2.b.2 – General Access at SE 4th St.	$ 7 to $ 12
Option 2.b.3 – Lidded Trench Section at SE 4th St. (Similar to MOU Recommendation)	Same Approximate Cost as MOU Recommendation
* Note: If the Bellefield Rd to Surrey Downs Option is accepted then the Cost Savings Range is $ 7 to 13 million.	

Resource	MOU Recommendation LRT Over 112th Ave	Proposal: 2b: 112th Ave Roadway Over LRT
LRT Operations	Complex vertical alignment with multiple grade changes and close vertical curves.	All options improve light rail operations due to fewer vertical changes in the alignment. Option 2.b.3 offers the least improvement as LRT still needs to descend and ascend as it passes through the trench area of the alignment.
LRT Access and Ridership	N/A	N/A
Traffic Impacts	Intersections along 112th Ave. SE operate acceptably.	Intersections along 112th Avenue SE operate similar to the MOU Recommendation.

Resource	MOU Recommendation LRT Over 112th Ave	Proposal: 2b: 112th Ave Roadway Over LRT
Vehicle Access	SE 4th St. to 112th Ave. SE remains open. SE 8th St. at 112th Ave. SE remains a "T" intersection. Surrey Down Park access closed from 112th Ave. SE.	Option 2.b.1: Emergency only access to/ from 112th Ave SE at SE 4th St. This alternative includes a design option for a road connection between Bellefield Residential Park and Surrey Downs neighborhood with access to SB 112th Ave. SE. Option 2.b.2 and 2.b.3: General traffic access to SE 4th St. would be provided with Options 2.b.2 and 2.b.3. Option 2.b.2: An optional "U" turn is provided in the vicinity of Main Street to provide northbound vehicles access to the neighborhood. Vehicle access at SE 4th St. is provided by right-in/right-out movement. All options: Bellefield Residential and Office Park access to/from 112th Ave. SE at SE 15th St. is relocated and changed to right-in, right-out movements.
Pedestrian Access	SE 4th St. to 112th Ave. SE remains open. Surrey Downs Park access closed to/from 112th Ave. SE. Sidewalk provided along 112th Ave. SE. Pedestrian walkway from SE 1st St. to East Main Station provides pedestrian access to 112th Ave SE.	All options: Sidewalks maintained on west side of 112th Ave. SE. A 14' multi-use path is extended on East side of 112th Ave north to SE 8th, which connects to an existing sidewalk from SE 8th St to Main St. Surrey Downs Park access closed from 112th Ave. SE. Pedestrian walkway from SE 1st St. to East Main Station provides pedestrian access to 112th Ave SE. Option 2.b.1 – West side sidewalk along 112th (no access to SE 4th) Option 2.b.2 and 2.b.3 – West side sidewalk is provided along 112th Ave. SE with access to SE 4th.

Resource	MOU Recommendation LRT Over 112th Ave	Proposal: 2b: 112th Ave Roadway Over LRT
Approximate Noise Impacts Light Rail and Traffic	Impacts: 49 LRT noise impacts west of 112th Avenue SE and south of Surrey Downs Park occurred from the elevated rail crossing 112th Avenue SE and transitioning to a trench on the west side of the road. Additional impacts occurred north of SE 4th related to the East Main Station. These impacts would be mitigated with sound walls, building sound insulation and special trackwork. East Main Station includes pedestrian crossing bells.	Option 2.b.1: LRT Impacts: 35 Option 2.b.2: LRT Impacts: 33 Option 2.b.3:LRT Impacts: 30 Reduced LRT noise impacts west of 112th Avenue SE would occur because the new roadway structure covers the LRT. Remaining impacts would occur from the proximity to the at-grade rail on the west side of 112th Ave. SE. These impacts would be mitigated with sound walls, building sound insulation and special trackwork. East Main Station includes pedestrian crossing bells for all options No traffic noise impacts result from raising 112th Ave SE over light rail.
Approximate Vibration Impacts	Impacts: 9 Between Bellevue Way SE and East Main Station, there would be potential vibration impacts at 8 residences and the King County Courthouse (if it remains). Impacts can be mitigated with track vibration isolation such as ballast mats, resilient rail fasteners.	Option 2.b.1: Impacts: 9 Option 2.b.2: Impacts: 10 Option 2.b.3: Impacts: 10 All options between Bellevue Way SE and East Main Station would have potential vibration impacts at 8-9 residences and the King County Courthouse (if it remains). Potential impacts can be mitigated with track vibration isolation such as ballast mats, resilient rail fasteners.

Resource	MOU Recommendation LRT Over 112th Ave	Proposal: 2b 112th Ave Roadway Over LRT
Visual Appearance	Elevated section and straddle bent over 112th Ave. SE. Retained cut with high retaining walls in Surrey Downs Park.	All options reduce the height of the transit structures adjacent to Surrey Downs neighborhood. New structures include the elevated 112th Avenue SE flyover and associated retaining walls. Option 2.b.2 would also add a bridge and ramp structure and retaining walls for the SE 4th Street ramps. Option 2.b.3 would add retained cut along Surrey Downs Park and north to Main Street, which may reduce the visual presence of the light rail. It also has the same high retaining walls as the MOU Recommendation.
Approximate Property Impacts	Partial: 14 Full: 14 Residential Displacements: 48 Business Displacements: 6	Option 2.b.1: Partial: 12; Full: 17; Residential Displacements: 52; Business Displacements: 6 Option 2.b.2: Partial: 12; Full: 17; Residential Displacements: 52; Business Displacements: 6 Option 2.b.3: Partial: 12; Full: 16; Residential Displacements: 51; Business Displacements: 6 Option 2.b.1 would acquire one additional residence for the design option of a Surrey Downs neighborhood access road through the Bellefield Residential Park.

Resource	MOU Recommendation LRT Over 112th Ave	Proposal: 2b 112th Ave Roadway Over LRT
Approximate Parklands Impacts	No direct access to park from 112th Ave. SE: replaced with new access from SE 4th St. Parkland acquisition for alignment on east side of park.	No direct access to park from 112th Ave. SE For Options 2.b.1 and 2.b.2, new park access road from SE 4th Street. Access for Option 2.b.3 would be the same as the MOU Recommendation. All options would have similar parkland acquisition as MOU Recommendation.
Approximate Wetlands Impacts	Wetlands buffer adjacent to Mercer Slough waterway impacted.	More wetlands buffer impacted.

3.3.5 Cost Savings Idea – Relocate Station to NE 6th St. – 3c

Table 3-6

Cost Savings Evaluation: Downtown Station Design – Relocate Station to NE 6th St - 3c

Description: Downtown Station Design	Proposal: 3c
MOU Project: Provides a cut-and-cover tunnel and station with tracks side-by-side, with track spacing widening at the station to provide for a center platform and mezzanine above to transition passengers from center to side(s) of 110th Ave. NE.	
Cost Savings Idea (3c): Relocate Station to NE 6th St – This idea would move the station to the south edge of the NE 6th St. corridor, the station is "daylighted", and the side platforms become partly on-grade and partly elevated as it approaches 112th Ave. NE. This configuration features surface access from the City Hall plaza. The platform has public access only from the west end. Vertical circulation from the west end of the side platform is by means of elevators, escalators and stairs down from the City Hall Plaza. The east end of the side platform is served by emergency egress stairs only. By moving the station from its current PE location in 110th Ave, a vertical realignment of the tunnel is possible, resulting in a shallower tunnel. Why Consider this Configuration: • Eliminates underground station construction costs. • Maintains current configuration of 110th Ave. NE and NE 6th St. • Maintains an entrance near City Hall and the Bellevue Transit Center. Design Considerations Addressed (From Sound Transit and City of Bellevue Cost Savings Work Plan - Motion M2012-41 dated June 28, 2012): • Reach agreement on impacts to City Hall and damages payment prior to further design – The Collaborative Design Process Team will reach agreement on the extent of impacts to City Hall and compensation for damages prior to a decision to select this Cost Savings Idea. • Determine acceptability of design deviation (curve at 110th/NE 6th) – Current conceptual design results in a design deviation (curve at 110th/NE 6th and curve from station to I-405) resulting in slower LRT operational speeds through the station area. Speeds are reduced from 20 mph to 10 mph west of the station and from 35 mph to 20 mph east of the station.	

3.3.7 Downtown Station Design - Cost Savings Idea 3e, 3b, 3c– Comparison of Options

Table 3-7
Cost Savings Evaluation: Downtown Station Design – Comparison of Options 3e, 3b, 3c

Description: Downtown Station Design Options				Proposals – 3e, 3b, 3c
	Adopted Project	Optimize Preliminary Engineering 3e	Stacked Tunnel 3b	Relocate Station to NE 6th St 3c
Cost Analysis (2010 $M)		Range of Savings		
3e 3b 3c		$ 6 to $ 10	$ 8 to $ 13	$ 23 to $ 39
Resource				
LRT Operations	South Portal Operating Speeds – 20mph –curve radius 250 ft.	Improves LRT operations to 25 mph at the south portal. Curve radius increases to 350 ft.	No change in speeds from adopted project at South Portal. Curve radius same as adopted.	Improves LRT operations to 25 mph at the south portal. Curve radius increases to 350 ft.
	North Portal Operating Speeds – 20 mph. –curve radius 250 ft.	No change in speeds from adopted project at North Portal. Curve radius same as adopted.	No change in speeds from adopted project at North Portal. Curve radius same as adopted.	Speeds are reduced at North Portal to 10 mph. Curve radius decreases to 150 ft.
	I-405 Operating Speeds -35 mph. - curve radius 1500 ft.	No change in speeds from adopted project at I-405. Curve radius same as adopted.	No change in speeds from adopted project at I-405. Curve radius same as adopted.	Speeds are reduced at I-405 to 20 mph. Curve radius decreases to 300 ft.
		This option improves LRT operations within the station area.	This option maintains LRT operations within the station area, similar to the Adopted Project.	This option affects LRT operations due to reduced speeds and tighter curves, especially at I-405.
		With this option light rail travel times are similar to the adopted project.	With this option light rail travel times are similar to the adopted project.	Overall increase in light rail travel time from Seattle to Redmond of approximately 30 seconds.

Description: Downtown Station Design Options				Proposals – 3e, 3b, 3c
	Adopted Project	**Optimize Preliminary Engineering** **3e**	**Stacked Tunnel** **3b**	**Relocate Station to NE 6th St** **3c**
LRT Access and Ridership	6,000 daily boardings at Bellevue Transit Center Station in year 2030.	Same as Adopted Project.	Same as Adopted Project.	Likely lower ridership from single station entrance at NE 6th Street. Slower LRT travel times may reduce ridership.
	Access to station provided through two entrances.	Two station entrances with improved access to Downtown and the Bellevue Transit Center with an entrance on the west side of 110th Ave.	Two station entrances with improved access to Downtown and the Bellevue Transit Center with an entrance on the west side of 110th Ave.	Access to station provided through one entrance across (east) from Bellevue Transit Center.
Traffic Impacts	Congestion impacts requiring mitigation at NE 4th St. and 108th Ave NE.	Similar downtown Bellevue average intersection traffic impacts as Adopted Project.	Similar downtown Bellevue average intersection traffic impacts as Adopted Project.	Same as Adopted Project.

Description: Downtown Station Design Options				Proposals – 3e, 3b, 3c
	Adopted Project	**Optimize Preliminary Engineering** **3e**	**Stacked Tunnel** **3b**	**Relocate Station to NE 6th St** **3c**
Vehicle Access	Maintains travel lanes on 110th Ave. NE as it exists today.	Removes west side lane between NE 6th and City Center Plaza garage due to west station entrance. Four lanes remain, two southbound and two northbound. Removes the dedicated northbound left-turn into the Bellevue Transit Center. A left turn only movement for buses into the Bellevue Transit Center may be considered.	Removes west side lane between NE 6th and City Center Plaza garage due to west station entrance. Four lanes remain, two southbound and two northbound. Removes the dedicated northbound left-turn into the Bellevue Transit Center. A left turn only movement for buses, only, into the Bellevue Transit Center may be considered. Decreases 110th Ave NE capacity by two traffic lanes –from four to two, south of NE 4th St to NE 3rd St. in order to site the southern station entrance. Northbound left turns from 110th Ave NE to NE 4th will no longer be permitted. Right turn pocket on 110th Ave NE at NE 4th is removed but right turns are permitted.	Maintains lanes on 110th Ave. NE as it exists today.
	Maintains four travel lanes on NE 6th by widening roadway to the south.	No Change from Adopted Project on NE 6th Street.	No Change from Adopted Project on NE 6th Street.	Existing configuration on NE 6th St. maintained.
	Maintains City Hall access on NE 6th St.	No Change from Adopted Project.	No Change from Adopted Project.	The business access for City Hall from/to NE 6th is removed in this option.
	Eastbound left turn lane at the intersection of 112th Ave. SE and NE 6th St. is removed.	No Change from Adopted Project	No Change from Adopted Project	Existing left turn lane at the intersection of 112th Ave SE and NE 6th St is maintained.

Description: Downtown Station Design Options				Proposals – 3e, 3b, 3c
	Adopted Project	**Optimize Preliminary Engineering** **3e**	**Stacked Tunnel** **3b**	**Relocate Station to NE 6th St** **3c**
Pedestrian Access	Business and residential access maintained. Sidewalk on south side of NE 6th.	No Change from Adopted Project. Same as the Adopted Project.	No Change from Adopted Project. Same as Adopted Project.	No Change from Adopted Project. The pedestrian access for City Hall from NE 6th St. is removed. Sidewalk access on NE 6th maintained in existing configuration.
Approximate Noise Impacts	48 noise impacts at Bravern residences. Impacts could be mitigated with sound insulation.	Same as Adopted Project.	Same as Adopted Project.	Same as Adopted Project. Relocation of station to NE 6th will add train bell noise at station.
Approximate Vibration Impacts	Vibration: 0 Groundborne noise: 1 There would be groundborne noise impact at the Meydenbauer Center Theatre Impacts can be mitigated with track vibration isolation such as ballast mats or resilient rail fasteners.	Vibration: 0 Groundborne noise: 1 There would be a groundborne noise impact at the Meydenbauer Center Theatre. Impacts can be mitigated with track vibration isolation such as ballast mats or resilient rail fasteners.	Vibration: 0 Groundborne noise: 1 A groundborne noise impact would occur at the Meydenbauer Center Theatre. Impacts can be mitigated with track vibration isolation such as ballast mats or resilient rail fasteners .	Vibration: 0 Groundborne noise: 0
Visual Appearance	No impacts.	Greater visibility due to west station entrance adjacent to Bellevue Transit Center.	Greater visibility due to west station entrance adjacent to Bellevue Transit Center.	Greater visibility due to station entrance across from Bellevue Transit Center.

Description: Downtown Station Design Options				Proposals – 3e, 3b, 3c
	Adopted Project	**Optimize Preliminary Engineering** **3e**	**Stacked Tunnel** **3b**	**Relocate Station to NE 6th St** **3c**
Approximate Property Impacts	Full: 0 Partial: 2 Two partial acquisitions needed for Station entrances. No displacements would occur. Parking stalls at the City Hall Parking Garage would be reduced by approximately 96 spaces.	Same as Adopted Project. Same as Adopted Project.	Full: 0 Partial: 2 One partial acquisition needed for Station vents and one partial acquisition needed for Station entrance. No displacements would occur. Parking stalls at the City Hall Parking Garage would be reduced by approximately 88 spaces.	Full: 0 Partial: 2 Two partial acquisitions would occur for at-grade station. No displacements would occur. Parking stalls at the City Hall Parking Garage would be reduced by approximately 188 spaces.
Approximate Parkland Impacts	Minor acquisition of Pocket Parks for south station entrance.	Same as adopted project	No use of Pocket Parks would be required for station entrance.	No use of Pocket Parks would be required for station entrance.